Social media and orthodontics: An analysis of orthodontic-related posts on Instagram

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Objective: The objective of this study was to determine the quality and content of orthodontic-related posts on Instagram.
Materials and methods: Eight orthodontic-related 'hashtags' were determined, and a total of 240 posts divided into 30 posts from each hashtag were investigated at two different time periods. Duplicate and unrelated posts were excluded from the study.
Results: A total of 227 Instagram posts (182 photographs, 45 videos) were analysed at two evaluation periods. The number of deleted Instagram posts was 13 and all were photographs. Most educational content was liked in the #orthodontics hashtag of the eight determined hashtags ($p < 0.02$). Most posts were shared for advertising purposes by other hashtags. Most posts were shared by dental professionals (152 posts). The group that shared the least number of posts were the dental companies (seven posts).
Conclusions: It was noted that Instagram is mainly used by dental professionals rather than for advertising purposes. Orthodontists should be aware of the content of social media platforms and educate and direct their patients towards correct and reliable Instagram resources.
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Introduction

In the 1990s, the Internet was marketed mainly as a collection of online digital brochures. Internet consumers were able to gather information about companies that presented their available products. In the 2000s, there was a substantial change in the perception and use of the Internet,[1] which established collective mind tools that supported learning, social interaction, information exchange, shopping, human-centred information sharing and creativity. Today, the Internet provides platforms and instruments such as blogs, podcasts, social bookmarks, tags and social networking software to allow individuals to interact and communicate in a virtual environment.[2,3]

Social media are defined as online technologies and applications that are used by people to share their ideas, experiences and points of view.[4] These websites allow individuals to communicate with their friends, families and other people around the world. Much of the global population has access to numerous websites that provide information about modern healthcare services. Moreover, this information is shared and disseminated by increasingly prevalent social media platforms. Recent studies have reported that 8 out of every 10 Internet users are able to access online health information.[5,6] In a systematic review evaluating the use of social media in providing information to orthodontic patients, it was shown that communication on several social networks provided a major source of information.[7]

Instagram is a social media application that supports free photograph and video sharing. It was founded in October 2010[8] and has increased its worldwide popularity since that time. By the year 2018, Instagram had become a social online platform claiming more than one billion members.[9] Although social media networks were initially created for

personal use, they are being effectively used by companies for the purpose of introducing products or services and communicating with existing and potential consumers.[10] Instagram is becoming a dominant channel for adolescents and young adults in commercial marketing, and its use in the field of orthodontics is also increasing rapidly. Like Facebook and Twitter, Instagram also uses 'hashtags' to define areas of interest for its users.[11] Many orthodontists use Instagram for patient education and advertisement. Despite the increased influence of this platform, no literature has been found that investigates the use of orthodontic-related content on Instagram. The purpose of the present study was to assess the quality and content of Instagram posts about orthodontics.

Materials and methods

The data were collected manually from Instagram (www.instagram.com). The most popular hashtags related to orthodontics were determined by using Google Trends. The hashtags identified were #ortho, #orthodontics, #orthodontist, #invisalign, #retainer, #invisalignsmile, #braces and #brackets. The data were collected at two different time periods in 2019 (16 June, 10 August 2019) by two researchers (MTA, TI). The total number of posts for each hashtag was recorded. Thirty posts for each hashtag were included at the first evaluation time and the URL for each post was recorded. Posts that were shared with each hashtag were grouped based on the source, purpose of sharing and the language used in the post. Moreover, whether the post was a photograph or a video, the number of 'likes' and number of comments were also recorded. The dental sources consisted of five groups identified as dental professionals, companies, pages, technicians and patients. The group designated as dental professionals included orthodontists, dentists, paediatric dentists and dental clinic pages. Technicians and technical laboratories were included in the technicians' group. The purposes of sharing the posts were determined as patient experience, education and advertisement. Duplicate posts and posts unrelated to orthodontics were excluded from the study. Since the present study comprised only data available in the public domain, it did not require approval from the local ethics committee.

All statistical analyses were performed using SPSS software (version 20, SPSS Inc, IL, USA). The data were tested for normal distribution by using the Shapiro–Wilk test and further analysed by the Kruskal–Wallis and Mann–Whitney U tests. The level of statistical significance was set at $p < 0.05$.

Results

A total of 240 posts, identified by the eight different hashtags, were analysed. The highest number of posts was attributed to #braces (2.1 million). The number of posts based on hashtags are shown in Table I.

The posts shared with the identified hashtags were re-evaluated a second time (10 August 2019). Thirteen of the 240 posts had been deleted by their authors, and all the deleted posts were photographs. There was one post for #ortho, one for #orthodontics, two for #orthodontist, three for #invisalign, one for #retainer, one for #invisalignsmile, two for #braces and two for #brackets. The highest number was 111,534 'likes' for a video shared by a dental technician for the purpose of advertising by using the hashtag #invisalign. The post with the highest number of comments was a photograph shared by a dentist for the purpose of advertisement by using the same hashtag, and this photograph post received 203 comments.

Twenty-two posts were shared by dental professionals, seven were by patients and one was by a company with the hashtag #brackets (Figures 1, 2). Twelve posts were advertisements, 11 were educational, and seven consisted of patient experiences related to content. The number of photographs and videos, the source of posts and purpose of sharing were classified and are comparatively shown for each hashtag in Table II. The number of 'likes' and comments according to 'hashtag' at the different time intervals are shown in Table III.

Table I. Orthodontics-related hashtag utilisation on Instagram.

Hashtag	Total no. of posts
#ortho	323 k
#orthodontics	876 k
#orthodontist	405 k
#invisalign	743 k
#retainer	73.3 k
#invisalignsmile	31.1 k
#braces	2.1 m
#brackets	434 k

Table II. Comparison of Instagram characteristics of #ortho #orthodontics #orthodontist #retainer #invisalign #invisalignsmile #braces #brackets.

		#ortho	#orthodontics	#orthodontist	#invisalign	#retainer	#invisalignsmile	#braces	#brackets
Post type	Photograph	20	27	25	22	25	24	28	24
	Video	10	3	5	8	5	6	2	6
Source	Dental professionals	17	13	25	20	11	25	19	22
	Patients	4	1	1	7	2	5	11	7
	Technicians	3	3	0	1	17	0	0	0
	Pages	4	3	2	0	0	0	0	0
	Corporation	2	0	2	2	0	0	0	1
Purpose	Education	6	10	14	4	9	0	3	11
	Patient experience	4	1	3	6	2	5	10	7
	Advertisement	20	19	13	20	19	25	17	12

Table III. The number of 'likes' and comments according to hashtag.

	Number of likes						Number of comments					
	16.06.2019			10.08.2019			16.06.2019			10.08.2019		
	0-50	51-100	100<	0-50	51-100	100<	0-5	6-10	10<	0-5	6-10	10<
#ortho	22	4	4	13	3	13	29	2	0	24	4	1
#orthodontics	26	1	3	16	6	7	30	0	0	23	4	2
#orthodontist	20	3	7	11	5	12	27	2	1	22	4	2
#invisalign	24	1	5	15	1	11	26	1	3	22	0	5
#retainer	22	5	3	17	3	9	29	1	0	27	1	1
#invisalignsmile	25	4	1	19	5	5	27	3	0	25	3	1
#braces	27	2	1	15	5	8	28	2	0	23	4	1
#brackets	25	3	2	16	4	8	28	2	0	25	2	1
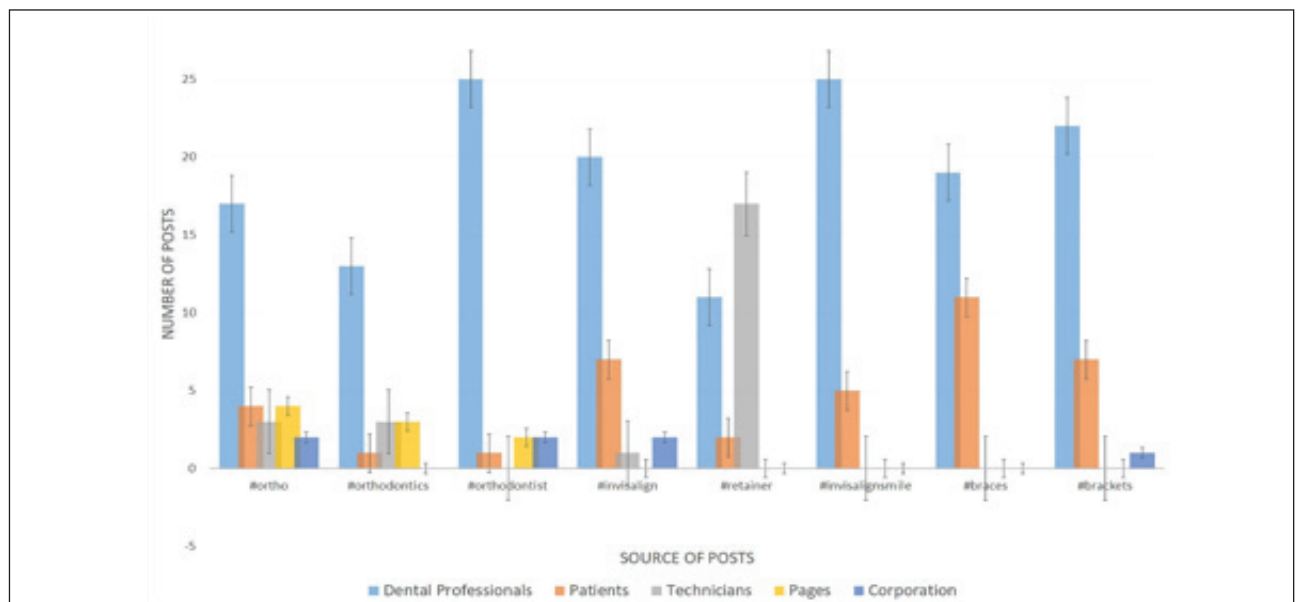
Figure 1. The distributions of the posts according to hashtag source.

Table IV. Comparison of hashtag number of 'likes' and comments according to post purpose.

Hashtags	Post purpose	Like Mean (SD)	P values	Comment Mean (SD)	P values
#ortho	Advertisement	647.16 (2015.53)		2.00 (2.92)	
	Educational	538.17 (511.20)	0.295ᵃ	0.8 (0.98)	0.091ᵃ
	Self-promotional	388.75 (685.16)		5.25 (4.35)	
#orthodontics	Advertisement	51.61 (59.55)		1.00 (2.11)	
	Educational	921.30 (1992.41)	0.020ᵃ	4.00 (6.80)	0.084ᵃ
	Self-promotional	1416.00 (-)		11.00 (-)	
#orthodontist	Advertisement	420.77 (1181.62)		1.46 (1.94)	
	Educational	659.29 (1661.68)	0.331ᵃ	4.43 (7.85)	0.198ᵃ
	Self-promotional	612.00 (-)		96.00 (-)	
#invisalign	Advertisement	8004.94 (26960.01)		15.24 (49.23)	
	Educational	200.75 (255.67)	0.824ᵃ	0.50 (0.58)	0.132ᵃ
	Self-promotional	339.00 (718.84)		6.33 (6.89)	
#retainer	Advertisement	138.06 (411.37)		1.83 (2.81)	
	Educational	83.44 (55.69)	0.217ᵃ	1.78 (2.17)	0.366ᵃ
	Self-promotional	14.00 (4.24)		3.50 (2.12)	
#invisalignsmile	Advertisement	71.38 (105.46)		1.71 (2.65)	
	Educational	-	0.840ᵝ	-	0.182ᵝ
	Self-promotional	103.00 (134.04)		4.20 (5.26)	
#braces	Advertisement	409.29 (1105.16)		1.71 (2.87)	
	Educational	599.00 (883.03)	0.318ᵃ	2.67 (3.06)	0.641ᵃ
	Self-promotional	244.00 (579.59)		5.63 (10.51)	
#brackets	Advertisement	93.17 (141.96)		0.67 (1.44)	
	Educational	331.40 (470.78)	0.254ᵃ	2.60 (5.10)	0.146ᵃ
	Self-promotional	48.33 (23.17)		2.00 (2.10)	

SD; Standard deviation, ᵃResults of Kruskal–Wallis test, ᵝResults of Mann–Whitney *U* test.

There were 182 photographs and 45 videos contained in the 227 examined posts. The countries from where the posts were most frequently shared were the USA (24), Brazil (20), the United Kingdom (17), Mexico (15) and Russia (12).

Posts shared for advertising constituted the majority (145 posts) except for the hashtag #orthodontist. Posts shared for educational purposes numbered 57. Dental professionals (dentist, orthodontist, paediatric dentist, clinic pages) shared most of the posts (152 posts). The number of 'likes' and comments according to purpose are shown in Table IV. There was a statistically significant difference the number of 'likes' for the #orthodontics hashtag related to the purpose of the posts ($p < 0.02$).

Discussion

The greatest benefit of Instagram over other social media platforms is the use of visual resources to make information collection easier. Valuable in orthodontics, the platform mainly focuses on videos and photographs, which has made Instagram the social media to which patients refer in relation to their health problems. Recently, it was reported that more than one billion users are active per month on Instagram, and more than 100 million posts are being shared.[12] Patients also quickly access posts regarding orthodontic treatments, as well as sharing information about their own treatments and experiences. Instagram has reached a different position relative to other social media platforms because the shared videos and photographs are information collection instruments
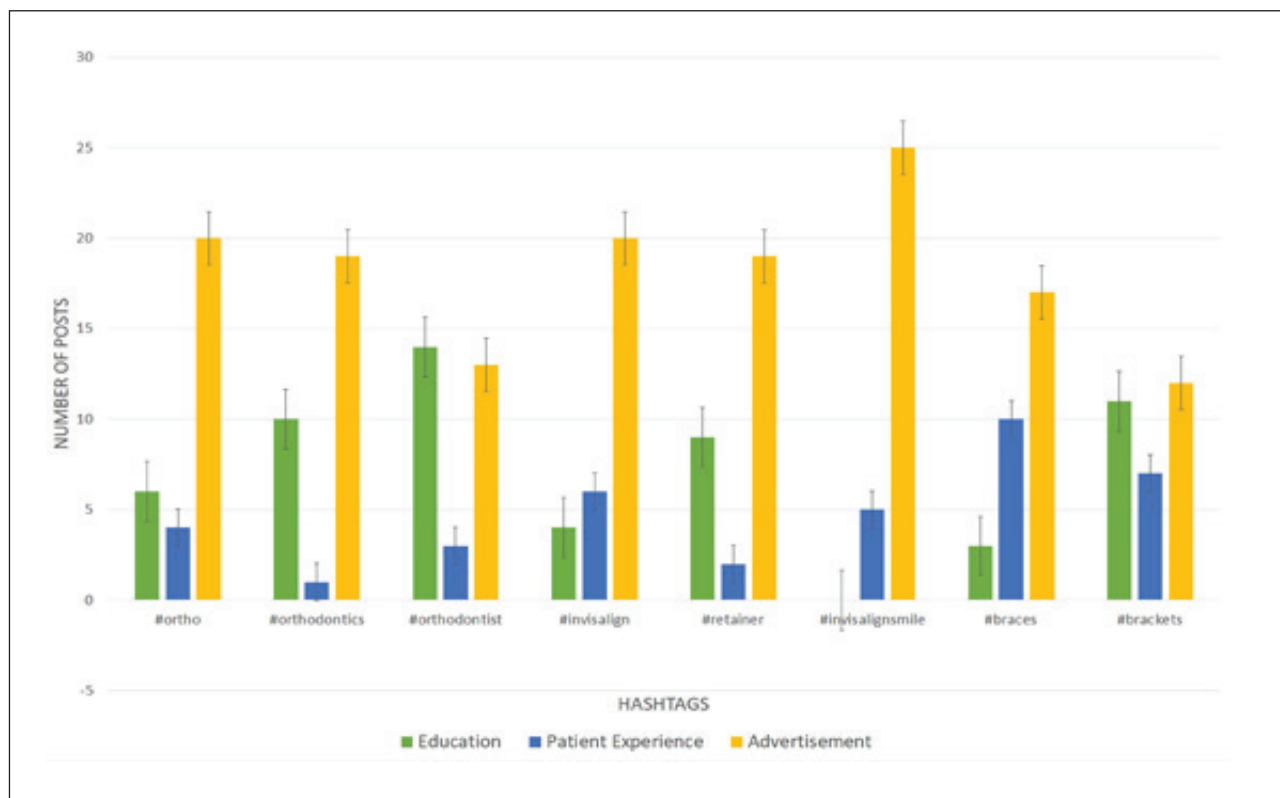
Figure 2. The distributions of the posts according to hashtag purpose.

that are easier to access and more effective. Therefore, the present study aimed to investigate the contents and quality of orthodontic-related posts shared on Instagram.

The literature provides broad evidence that the presence of social support improves patient experiences of healthcare services.[7,8] Social media use may help patient support by allowing the creation of like-minded groups that may improve interpersonal contact, and answer relevant questions and support patient experiences.[13] Knösel and Jung measured the knowledge levels found in orthodontic-related videos on YouTube™, and determined that videos were mostly shared by patients, and most of the videos shared by orthodontists were for advertising purposes. The study also concluded that the relevant videos were inadequate in content.[14] In the present study, the Instagram posts were shared mostly by dental professionals (dentist, orthodontist, paediatric dentist and clinic pages). Sharing for advertising purposes was similarly dominant in the present study. It was therefore considered that the visual power of Instagram to influence patients may have swayed clinicians to use the platform for advertising.

Henzell et al.[15] investigated the contents of tweets on Twitter and noted that patients used social media platforms to share their positive and negative feelings about braces. The results of such studies indicated that patients use social media for different purposes. It is therefore important for healthcare professionals to monitor popular Internet and social media platforms and appreciate the information that could be accessed by patients. No study was found to evaluate orthodontic-related posts on Instagram, even though there have been studies related to orthodontics on other social media platforms.

The posts shared identified by the eight hashtags in the present study (#ortho, #orthodontics, #orthodontist, #invisalign, #retainer, #invisalignsmile, #braces, #brackets) were evaluated based on the relationship between their reasons for sharing coupled with the numbers of 'likes' and comments. No statistically significant result was obtained except for the hashtag #orthodontics related to the number of 'likes' ($p < 0.02$). The reason for this may be that the hashtag #orthodontics is a more scientific term in comparison to the other hashtags, and so it was shared in greater numbers in educational posts.

Based on the analysis of the hashtags, posts were shared for advertisement purposes except for the #orthodontics hashtag. The hashtags #invisalignsmile and #invisalign were prominent among the posts shared for advertising purposes. The finding that all posts with these hashtags were shared by dental professionals was also noteworthy. When the number of comments of the shared posts was analysed, it was evident that the posts shared with the #invisalign hashtag received more comments and 'likes'. It was considered that patients query treatment with the clear aligner system and obtain information about this popular treatment option through Instagram.

Coleman et al.[16] carried out a survey study of orthognathic surgery patients to investigate the patients' use of social media. Of the participants, 94% stated that they always or often used the Internet to access health-related information and 49% of participating patients used social media platforms to access health-related information. It was reported that 89% of the patients trusted the sharing by medical professionals on social media. It was clear that the Internet and social media are the most frequently used tools for patient information gathering.

The advertising posts shared by orthodontists or dentists may be biased or exaggerated. It is highly difficult for a social platform to manage content if there are more than 100 million 'shares' per day. The authors of the present study believe that there may be a separate verification system for dental professionals on social media platforms, therefore more accurate information may be shared by a verifying account. Moreover, followers who are conducting research on health-related topics may receive more accurate information via the posts shared by verified accounts. Orthodontic associations may also help in the creation of society awareness by sharing posts on official Instagram accounts that focus on informing patients.

One of the greatest limitations of the present study was its cross-sectional nature. To obtain a broader perspective of the content on Instagram, the data were collected at two different time periods. As the contents on social media constantly change, this does not allow a generalisation of studies to be carried out on social media platforms. An additional limitation was that the time frame of the study was short, and the sample size was small. Nevertheless, the present study provides new insights about orthodontics presented on a social media platform that enjoys widespread use.

Conclusions

Patients need to be more comprehensively and accurately informed about orthodontics on social media. Instagram is mostly used for orthodontic advertising purposes. Orthodontists and dental professionals should share more educational posts on Instagram and be aware of the content of social media platforms to better inform their patients.

Financial interests

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